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MAY
1954

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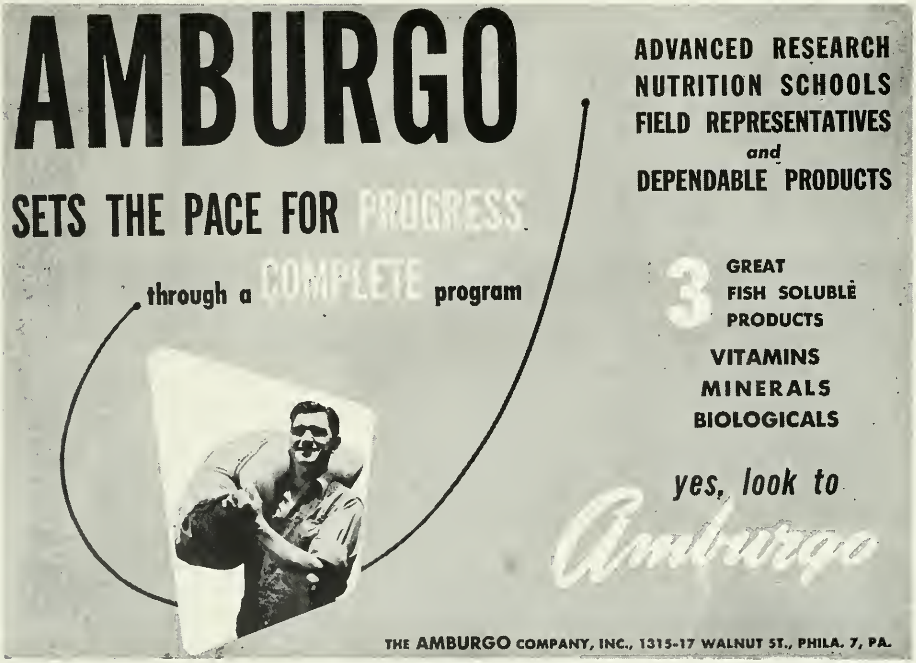
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Gleaner

NATIONAL AGRICULTURAL COLLEGE

Farm School, Bucks County, Pennsylvania

VOL. XLVIII MAY, 1954 NO. 3

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ON THE COVER: Sherman Freed, a Junior Agronomy major, studies a cross section of a particular plant species with the aid of a microscope. *Photo by Marvin Adleman.*

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The Gleaner is published throughout the school year by the student body of the National Agricultural College. Entered as second class matter at the Post Office at Farm School, Pa. Subscription rate—$1.50 per year.

. . . . Editorial Comments . . . .

THE PLACE OF A COLLEGE PAPER

The Spreader, weekly student newspaper appearing regularly every Wednesday, has completed its first successful season. Begun last fall by members of the GLEANER staff, The Spreader has proved to be a valuable asset, supplying College news, sports results, editorials, and a classified service to students. As a regular chronicle of College activities, past, present, and future, The Spreader serves as the chief source of campus news.

Under the able editorship of Morton Hershman, the originator of the paper and former editor of THE GLEANER, The Spreader has constantly increased in popularity and is at the point where it is a necessary part of college life at N.A.C.

The idea of a weekly newspaper here at the College was conceived last spring, a title selected, and arrangements made for publication. Predictions of competent instructors and men who had seen papers rise and fall were that The Spreader would not last more than seven issues. As it is, the first volume has been successfully completed, with 29 issues to its credit.

The Spreader fills a wide gap of news coverage not provided for in THE GLEANER (issued four times during the College year). Since "stale" news is not news at all, most of that which is printed in The Spreader would not at all be suited for THE GLEANER because of this two month lapse between issues.

A great deal of credit is due the men who have brought The Spreader to its high standing on the campus. Morton Hershman, its editor, Lionel Berger, typist, and the many men who report for the paper have done a wonderful job and have the gratitude of the student body.

The Spreader will soon be entering its second year of publication. A large part of the staff graduate this month but, carrying on the traditions of the paper, a new staff fully experienced in having put out the last five issues this Spring will take over next Fall. The new editor will be Paul Frank, a member of the class of '55, who has done a fine job on the last issues of Volume one and will continue to improve and enlarge the paper with every issue in the future.

We compliment The Spreader writing staff on producing a newspaper worthy to be esteemed a part of the College.

LOOKING AHEAD IN AGRICULTURE

JUST what will be the future of the American farmer? Will he continue to produce surpluses? Will consumption increase to a point where surpluses will be unlikely? These questions can not be easily answered. Technological advances in agriculture have kept far ahead of population increases since the Industrial Revolution and Malthus' theory that population increases would overtake food production has been disproven. However, further technological advances in agriculture are a challenge which must continuously be met since it has been proven that it is due to this factor that food production has not fallen behind population.

Significant verified facts, recently collected by the Advertising Council, have shown several important trends in this respect:

Number one . . . Our population is increasing at an astounding pace. The total births in 1953 were approximately four million, the highest annual figure ever recorded. By 1960 our population will be close to 180 million. Every day nearly 11,000 babies are born. Each month we add to our population more than an Omaha, Nebraska, a Norfolk, Virginia, or a Toledo, Ohio.

Number two . . . Our people are living longer. By 1960 our population over 65 years old will number fifteen and a half million people. That's a million more than the entire population of Canada.

Number three . . . American consumption of agricultural materials will increase more than 39 per cent by 1975.

However great our population increases, however great our future food needs, with increased knowledge through research and education in the Nation's Agricultural Colleges and experimental laboratories, there is little doubt that we can and will meet the challenge.

Missing Persons Bureau

Anyone knowing the whereabouts of any of the following lost Alumni, please contact the Graduate Placement Office at the National Agricultural College, Farm School, Pa.:

Aklufi, Sandy
Barg, Robert
Billerbeck, Lawrence
Beck, Benjamin
Bloom, Abraham
Brooks, David
Brophy, Edward
Burgoon, Donald
Colladay, Harold
Davis, Gordon
Goldfarb, Saul
Gross, Guy
Kreisler, Melvin
Lubin, Paul
Miller, David
Repash, Leonard
Reeves, Richard
Resnick, Saul
Roomet, William
Rothman, Sidney
Smith, Ralph
Voschin, Joseph

Because of the shortage of permanent storage space, some farmers were forced to pile part of the bumper 1949 corn crop on the ground. Here Tom Moates (left) county Agricultural Conservation Committee representative, and Jake Webber, Committeeman, examine one of these piles in Harrison County, Iowa.

Photo courtesy of U.S.D.A.

THE CROP SURPLUS PROBLEM

By Clinton R. Blackmon

It has been stated that a man who goes without food for twenty-four hours will quarrel; one who is denied food for forty-eight hours will steal; and one who is without food seventy-two hours will fight. The problem of sufficient food for the growing population of the world was raised in 1789 by Malthus who held that population tends to increase faster than the means of subsistence can be made to increase. In 1898 Sir William Crookes, an English economist, predicted that all available wheat land in the United States would be in use by 1930, and the United States would be driven to import and would be struggling with Great Britain for a lions share of the world's wheat supply. Others have taken this dismal viewpoint that population will soon outgrow food supply throughout the world.

In some parts of the world the balance between food supply and population is a real problem. Many of the peoples of Europe are existing on a substandard or inadequate diet. Thousands of people in India and China actually starve to death even during normal periods. In many of the countries more than half of the gainfully employed are working in agriculture, using ancient methods, and producing too little. In many of those countries there is land that can be put into production by fertilizing, irrigating, draining, etc. In practically all the countries of the world, excepting those living under communism, the United States now maintains agricultural experts to help the governments establish a sound agricultural program. For instance, India has made great strides in its agricultural revolution. They produced so much wheat about 2 years ago that they were able to export considerable quantities into China. Ironically, while the agricultural experts have been increasing the food supply, the health experts have gone into India and increased the life expectancy of babies. This tends to keep the population ahead of the food supply. Scientific research in agriculture is needed in most of the countries of the world to keep agricultural production up with the growing world population.

The situation of adequate food production for the people of the United States has been met by the splendid progress in farm production since 1920. In the 33 years since 1920 our U. S. population has increased 43 percent, yet we are feeding our people from the same acreage of land we had at that time—and they are being fed better than ever before in our history. Byron T. Shaw, Administrator, Agricultural Research Administration, U.S.D.A. reported to the House Subcommittee on Agricultural Appropriations that our population increase by 1975 will demand about 30 percent increase in production. Can this be done? Recent estimates of agronomists are that we could double our present production of food and fiber by 1975, if necessary. It wouldn't take a miracle either, all we have to do is use, on a wide scale, the good farm practices and new farm crops developed in recent years. Let us look at the record on a few basic crops and see how this is possible.

The reports of the Federal Crop Reporting Board show how yields have been going up very rapidly in recent years. Average yields of corn for the United States is 35 bu. per acre, yet members of corn clubs in many states are producing over 100 bu. per acre with improved practices. In South Carolina, where the record yield is 255 bu. per acre, the average corn yield is only 18.3 bu. per acre.

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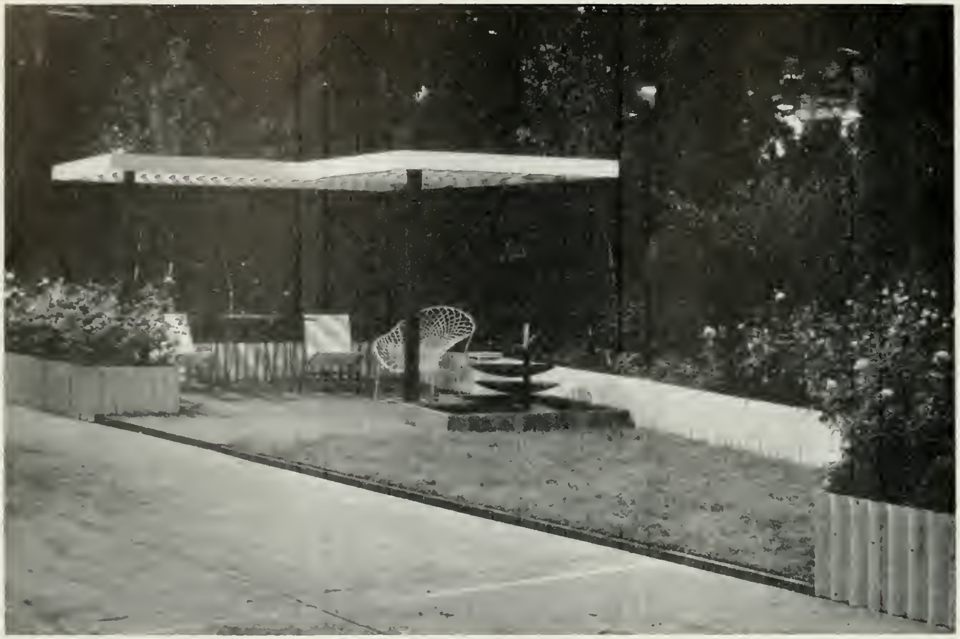

N.A.C. TAKES SILVER MEDAL

At Philadelphia Flower Show

THE Ornamental Horticulture department of the National Agricultural College won the Silver Medal, the second highest award in the Philadelphia Flower Show which was held March 29 to April 3 at the Commercial Museum, in addition to taking first prize in the Rose Garden Display class.

Designed by Mr. Blau, professor of landscape design, along with the senior design majors, the display featured a contemporary rose garden.

Preparations for the show began last February as shrubs and trees were moved into the greenhouses for forcing. Sod was also brought in at this time and carefully brought up to a rich green carpet.

The construction materials were preassembled with bolts and carefully taken apart for shipment. Three-hundred floribunda rose bushes were carefully forced so that they would just be reaching their peak at the time of the show.

A week before the show, actual construction of the fabulous 1000 square foot display was begun with the Junior Ornamental Horticulture majors, including Ray Fisher, Don Johnson, Marvin Adleman, Frank Elton, Allen Nichols and Bob Sweeten, handling the general layout and plantings.

The display, the largest ever set up by the College, was in the main aisle of the show and featured many new and interesting garden materials which could be used in almost any garden. Of particular interest was the overhead Gambella, constructed of accordian-type Oak ply. This material is modern, pleasant to look at, and provides shade with a touch of the unusual.

The material supporting the rose beds, which incidently were placed on tiers of three levels, was a light grey corrugated asbestos-concrete. The three basined black fountain was the innovation of Mr. Blau, the water falling from one level to the next and finally into the pool to be pumped through again. The brick work was laid in a basketweave pattern, framed by reddish-brown dividers. In keeping with the pattern, an interesting set of contemporary outdoor furniture was used which can be seen in the above photograph.

Although the construction materials were exceptional, the plant material made the display. In the background 20-25 foot Cryptomeria japonica were used, the only ones in the show. In closer were Taxus, Viburnum, and White Birch with lush new growth from their babying in the greenhouses.

Chrysanthemum plants about 10 inches high helped suggest a day in June, but the main feature of the garden was, of course, the roses which were in full bloom all through the show. The well blended color combination of Fashion (salmon-pink), Dagmar Spaeth (white with a suggestion of pink), and Improved Lafayette (red), tiered in three masses to the right and massed around the front and left sides, put the finishing touches on the display to which the judges awarded first prize in its class and, the second highest honor in the show, The Silver Medal.

"A" DAY — 1954

By LARRY KLEIN '57

"We proudly dedicate the sixth annual "A" Day program to Calvin Kidder, a member of the class of 1953. His tragic death last fall, while in the uniform of our Army, shocked and saddened many of us."

The above were the opening words in this year's "A" Day program. The planning committee, along with the entire student body, could not have given a more fitting dedication to a man who held "A" Day so high in his heart.

At 9:00 A. M. on May First, the sixth annual "A" Day officially opened. Every club on campus was excellently represented, making this "A" Day one of the best to date with over three thousand people attending the gala all-day affair.

Dairy opened the show with the first fitting and showing contests of the day. Bob Hinkle, Joe Mullins, Wm. Jones, and Bill Loesch competed in the 1-year old class. Loesch took a first and later went on to take the Grand Champion award in the Dairy Show.

The 2-year olds were groomed and shown by Owen Smith, Kristen Hauge, Wm. Van Keuren, and Dick Woolsey. Hauge won a first in this class. The three year old winner was shown by George Cox in competition with Harold Jefferis, Merald Sockwell, and Howard Destler. Art Weinstein ran away with the five year old class but three Freshmen, Dick Barette, John Lesko, and Dick Lucas did their best in vieing for top honors. In the open class, Charles Green and Harry Weber showed two beautifully fitted animals, but the gentleness of his Guernsey helped Weber take first prize.

The Poultry Club members set up many elaborate exhibits and displays in the Farm Machinery Building. Fred Haentze and Jim Tessmer organized several high school judging contests. The judge for this was our own Poultry professer, F. S. Jacoby. Steve Ferdo, class of '54, also ran a contest "Testing Your Poultry Knowledge."

Ray Posey won first prize with his exhibit on Egg and Poultry Quality. Others entering exhibits in this contest were Kirk Arnold, Ron Stammel, Fred Warta, Bert Litoff, Sam Boltax, Morton Hershman and Bob Fenyves, Ray Bonowski and Ned Worstall, Hannan Reich, Tev Wernicoff and Clifford Soss.

The Loucheim Gymnasium was lavishly decorated with the eye-filling exhibits of Horticultural Society Members. The showings were grouped into eight classes. The first, a garden retreat class, had two exhibitors competing for top honors. Wayne Groff, Barry Lamb, Wayne Hoffner and Bob Sweeten took the first prize with Bill McCall, Duane Bair, Bernie Greenberg and Joe Carstens running second. The winners of this class later went on to take the Grand Champion award for the show. Reserve Grand Champion was a woodland planting designed and set up by Marv Adleman, Tom Hoffman, and Don Johnson.

In class three, Semi-Naturalistic Planting, and class seven, Educational (Chemical), single exhibits were entered. The former was a rock garden well designed by Gil Finkle, Joe Catino, and Walt Kendzierski; the latter an educational exhibit on Weed Control set up by George Weaver.

Harry Conover took a blue ribbon in class eight (Educational-Miscellaneous) with an excellently carried out Dry Material exhibit. Others in this class were Marty Brooks, Irv Breber and Carl Bornfriend; Arthur Poley: Wm. Bender; Milt Carpenter, Silvio Caro and George Hartfelder. Paul Lepard and Walt Kendzierski and Bud Ross set up a well executed exhibit on "Better Education and Living Through Agriculture." George Weaver also did a good job on his "Model Vegetable Garden." Kubat and Weitzner demonstrated the effects of hormone on tomato production, using greenhouse forced tomatoes for the experiment.

John Staeble took a first prize in the Educational (fruit) division over the exhibits of Art Gale with a clear demonstration of the "Training Systems of Grapes." Ray Bonowski also took a blue ribbon with a model illustrating contour farming and crop rotation.

POULTRY LAB DEDICATED

At 11:30 the Pennsylvania State Secretary of Agriculture Miles Horst spoke at the dedication of the new Regional Poultry Diagnostic Laboratory recently set up at the College. Several hundred poultrymen along with many distinguished guests attended the opening of the Laboratory which will prove to be a great asset to the poultry industry in Bucks and neighboring counties.

In the annual Log Sawing Contest two year champions Lee Harvey and Don Johnson relinquished their title to Joe Waters and former student Lucas Lane. The Co-ed Milking contest boasted more entries than Log Sawing as Kirk Arnold and his partner proved to be the best tuggers.

The Animal Husbandry Club members held their Fitting and Showing contests in the afternoon. Judges for the events were James Shearer, "Doc" Holleran, and Jim Hannah. The first of the four classes, Beef, was subdivided into two divisions: the Hereford and the Angus. First in these divisions were Ed Adams and Karl Barth respectively. Runners up were Ed Dunn, Duane Bair, Frank Hallberg, Art Force and Owen Stanley. In the Sheep class Ben Pittman took the blue ribbon and went on to take the Grand Champion Award in handling all of the animals entered. George Parry was Pittman's contender in this class. In class three, horse showing, Ed Pouttu showing Koncarhope III beat out Flanders, Harkness, Cedarbaum, Eckhart, West and Rose.

The hogs entered by McHutchenson, Groff and Holtzapfel made up the fourth class. Wayne Groff's animal won this class and later went on to try for the Grand Champion title with the other class winners. Many farm machinery companies set up exhibits of various farm equipment. In the afternoon a demonstration of new impliments was held on a nearby field of Rye.

Both the Art and Photography Clubs entered many fine exhibits in the Show. George Weaver took the Grand Champion Award in art with Bernard Wisser Reserve Grand. First prize in the beginner class went to Brandt, in the advanced class to Weaver. In the Oil Painting division Dave Weitzner took top honors; in Water Color and Tempora, Bernard Wisser; in Black and White, Marvin Adleman. In the Sculpturing classes, Ed Jardel took Grand Champion, with Gil Finkle Reserve. Richard Block won a first in this division. In the Photography show, Marvin Adleman cleared the board taking first, second, and third.

The Food Industry and Agronomy clubs did not engage competition, but

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What Are N.A.C. Graduates Doing?

Peter Glick, Jr.
Director of Graduate Placement

The main objective of the National Agricultural College, since its accreditation in 1948 by the State of Pennsylvania to grant a B.S. degree in the seven (7) fields of Agriculture, has been to graduate men who are qualified to make a success of a career in that field of endeavor. There have been four classes graduated up to this date with the first ceremonies having been held in June of 1950. The best method of evaluating the effectiveness of the College's program is to appraise the positions held by the men of these four classes that constitute the College's alumni. The Graduate Placement Office has been keeping in constant touch with these graduates through annual surveys started in the fall of 1952. Forms have been sent to these men regularly each Fall, with follow-up blanks being forwarded to graduates who have failed to report in the annual survey. The results were compiled in an informal manner last Spring, as the report was in its infancy and could not be considered really official. This year the information received was so complete that the Graduate Placement Office felt that an official report could be finally tendered. The results are very revealing and show that the College's program has reached its main objective very impressively.

There are 177 graduates listed in our files and of that number only 22 did not answer in the surveys. The armed forces has claimed 30 of the remaining 155 and it is interesting to note that a large percentage of this group have obtained jobs in the Army, Navy, or Air Force that may be directly allied with Agriculture. Such duties as food inspectors, landscapers, and sanitation work were obtained because of the man's agricultural background and education. Several have received commissions and staff non commissioned officer's ratings due to their College experience and aptitudes. Several others had the opportunity to enter officers' school, but declined because of the extra service time involved which would keep them from their chosen profession for an additional length of time. Three members of the College's alumni are deceased, which brings the total number of graduates actually working in civilian occupations, and noted in this report, to 122. Here we see some very satisfactory figures. Only 7 of that number are engaged in occupations that may not be categorized as positions in productive agriculture or allied fields. That means that the small percentage of 5.7%, or merely ½ out of every 10 graduates, are not working in the profession for which they were trained and educated at the National Agricultural College. Still further to the College's credit, several of these men are employed in positions that they would not have qualified for if they had not possessed a College degree.

The question now naturally arises as to what are these 115 alumni or 94.3% involved in Agriculture actually doing? Productive agricultural positions have claimed 58 of these men or a little over 50% of them. This group holds jobs in all the phases of that area, with most of the men being channeled into the farm manager classification. The 18 in that category are managing farms in most of the surrounding states and have found employment on privately owned operations as well as the larger type corporation style business. There are 10 herdsmen and 1 milk plant operator with herds ranging from 35 head to approximately 225. Quite a few of the graduates have been fortunate enough to be able to own and operate their own farms as we find 10 in that group; a comparatively large number considering the high cost of starting such an enterprise and the recent years of graduation. The Ornamental Horticulture graduates are employed as owners and operators of their own businesses (7), landscape foremen (7), nursery superintendent (1), and growers in the field (2). The other men in production are working as a beekeeper (1) and a farm contract worker (1). Most of the men in this group have been promoted to better positions yearly and are constantly improving their standing in the profession.

The allied fields of agriculture seem to be attracting more of our graduates every survey. The report shows that there are 52 men in this group with the largest number of them employed in the sales classification (18). This compares favorably with the trend in regard to most College graduates as the large companies are constantly seeking young, energetic, qualified men to sell their products. The sales and service work includes the areas of feeds, fertilizers, insecticides, agricultural chemicals, agricultural machinery, and several others. We find that our men are much in demand for this type of work because of their excellent background and experience. It can compare with the many jobs that are always open for N.A.C. graduates in production.

The field of education has claimed 4 of our alumni and we find that they are doing an excellent job in teaching in spite of the fact that the College does not grant a degree in Agricultural Education. There are 6 men in managerial positions which include practically all of the majors taught at this College. The Food Industry and the Agronomy curriculums have sent 7 men into research and quality control work. Although degrees beyond the B.S. are usually necessary in research, these 7 men have found good positions and seem happy in their work. There are 6 graduates working either as food inspectors (3), buyer of livestock (1), inseminator (1), or public relations (1). The remaining 11 men are occupied in Civil Service jobs with the U.S. Department of Agriculture, States or Cities.

There has been some difficulty in getting our graduates admitted into graduate school to work on advanced degrees because of this College's comparatively new position as an institution of higher learning. However, the barriers have been lowered to a great extent recently and we find that 5 men are now working on graduate degrees in large Universities such as University of Missouri, University of Massachusetts, Harvard University, and Colgate University, with 1 graduate at present holding a Masters Degree from the University of Massachusetts. This trend points to the fact that the B.S. degree from N.A.C. is gaining in prestige yearly with this improved standing definitely being shown through the fact that Rutgers has recently accepted several of our alumni for graduate work in next fall's class. We are not, at this time, able to com-

(continued on page 15)

MAN OF THE MONTH

R. D. FORBES

By Paul Lepard '57

Teaching English for the first time in forty-three years since he got his masters degree in English,—that's R. D. Forbes. In my opinion, Mr. Forbes has one of the toughest jobs on campus. What could be as hard as teaching English to ninety freshmen?

Mr. Forbes is an interesting conversationalist, and I would like to recount an interview which began in the faculty house and ended on the steps of Segal Hall.

The conversation began with his early life. He is one of the few people who doesn't mind remembering his age. He was born in New Jersey in 1891. At Friend School in New York he received his elementary education. (This is a Quaker school, although he himself is not a Quaker.) In 1911 he received a degree in English from Williams College in Massachusetts, and in 1913 his Master of Forestry degree was granted to him from the School of Forestry at Yale University.

Mr. Forbes' first job in forestry took him to Arizona and New Mexico with the U. S. Forest Service. He has worked in one half the states of the Union. Among these were the mountains of North Carolina and their virgin woods. (Virgin woods being those cared for solely by nature.) From 1916 to 1917 he was the New Jersey Assistant State Forester.

In 1917, before being appointed as the first state forester of Louisiana, he was living in New Jersey. He was warmly welcomed on this new position with the task of rebuilding the Louisiana forests of which 90% had just burned out. His main object was to make people conscious of fire destruction, which he accomplished by posting signs along the highways and mountain roads. This was one of his most difficult writing assignments. The signs were unique and appealed to several classes of people, like the hunter, traveler, etc.

From 1921-27, R. D. Forbes was the director of the Southern Forest Experiment Station. This included forest territory from Texas to South Carolina. Until 1939 he was director of the Allegheny Forest Experiment Station in Philadelphia. He spent the following two years in the anthracite regions doing forest surveying. In 1942 he resigned from the U. S. Forest Service and remains today a consulting forester.

Professor Forbes has written all his life. Most of the time putting complicated forestry in the words of the layman. These included government bulletins, lumber trade journals, and others. All totaled they number about seventy-five.

Mr. Forbes is the editor of the "Foresters Manual for the Society of American Foresters". He has been working on the manual for the past five years, covering every field of forestry. He has one hundred-fifty people working for him on this edition, which is to be published next year.

Art is also one of his outside interests. He recently took a group of freshmen to the Philadelphia Art Museum to see the works of Van Gogh.

He likes to spend at least two days a week working in woodlands. He is often seen dressed in high top shoes carrying his double edged ax.

In 1934, Mr. Forbes was an aid in a project which has been of great service to the woodsman. He commented that this was one of the most important services he has had a large hand in. 3500 acres of virgin forest containing hemlocks and hardwoods were purchased by the government. The forest will remain untouched and is to be as a living museum piece. Through study of this land we can tell how nature rears a forest.

Ninety-nine percent of all the woodland existing in the U. S. today was planted by nature. The other One percent, by man. If we want hemlocks, oaks and other trees to remain, you can see how important it is to watch mother nature, and then imitate her. Although this experiment is young, it has already aided us. We have learned that the white pine is the offspring of catastrophe. An example of this is noticed after a forest fire. When the land is completely bare the white pines will begin to grow. By imitating nature we learn to clear land to encourage white pine growth. (*The woodland mentioned is the Tionesta Natural Forest.*)

Life's two hardest decisions, an occupation and mate, were made successfully by Professor Forbes. Mrs. Forbes formerly of Philadelphia, and Mr. Forbes now live in Ambler, Penna. When Mr. Forbes was eight years old, he selected his career. At that age, his definition of a forester was one who lives in a forest and cares for it.

The pioneer character of Mr. Forbes along with his academic knowledge are a great asset to N. A. C. We wish him many continued years of happiness.

Of Angstroms, Micrograms and Molds

By Uriel H. Schoenbach

Investigation on the natural sciences can be divided into its "applied" and "fundamental" aspects. A study of plow moldboards, aimed toward the development of a more efficient shape or a better alloy, is an example of "applied" investigation. So is medical research. Such studies are conducted for "practical purposes", i. e. to develop a subject for which the basic physical, chemical, and biological knowledge already exists. So-called "fundamental" investigations, on the other hand, are carried out solely for the purpose of adding to the small store of basic theoretical knowledge which we now have concerning the physical universe.

Neither one of these two types of research is "better than," or different in method from, the other. In fundamental research, however, the aim is broader, permitting greater leeway in the choice of objects, while in applied research the results are of greater immediate social and economic significance. Both types of work are carried on at N. A. C.

Two projects now under investigation will illustrate the nature of the research work being done here. The people engaged in the work include Dr. Schatz, Dr. Mohan, Gil Trelawney, and myself. Karl Barth helps with the transfer of cultures, the preparation of reagents, and the making of bacteriological media. Mark Rabinowitz handles glassware washing which, incidentally, can be a very exacting job (as in the elimination of virtually all potassium ions from the glassware). Mrs. Crouthamel has the exacting job of coping with impossible-to-pronounce scientific words on her typewriter.

The Urethan, or Cancer, project, aided by a grant from the U. S. Public Health Service, concerns a specific microbe, the actinomycete *Streptomyces nitrificans*. This organism looks like a cross between a mold and a bacterium, and is related to the microbe which produces streptomycin. *S. nitrificans* has the unusual property of being able to grow on the organic compound (and cancer inducing agent) urethan (ethyl carbamate) as its only source of carbon and nitrogen.

When you consider what a great variety of amino acids, vitamins, and other complex carbon and nitrogen sources are necessary for the maintenance of many microorganisms (not to mention *macro*-organisms, such as ourselves!), you can appreciate the potential significance of *S. nitrificans* Do not think that these complex substances are not needed by this microbe; they are indeed. For *Streptomyces nitrificans*, as for us, these substances are "essential metabolites", i. e. building materials necessary to the construction of that fascinatingly complicated piece of molecular architecture, protoplasm. But while we, and many microorganisms, depend on complicated substances in our food, *S. nitrificans* can *manufacture* all those which it needs from a single compound, urethan.

This is a fact of great interest in fundamental biochemistry and microbiology, as well as in genetics. Add to this the applied aspects of the problem, stemming from cancer-inducing and other properties of urethan, and you can well understand why Dr. Mohan, working on the problem, hardly finds time, or inclination, to look up from our spectrophotometer, into which he has just inserted a delicate glass cuvette, containing cell-free (enzyme) extract of our actinomycete.

Enzymes are protein molecules which accelerate a specific reaction involving other molecules, splitting them, oxidizing them, coupling them together, etc. A certain enzyme, cytochrome oxidase, already has been found to be present by Dr. Mohan in the vast system of chemical reactions which he plans to investigate in *Streptomyces nitrificans*. Here, as in many problems involving cancer research, there is no immediate attempt to "find the cause and cure" of the disease. It is hoped, rather, that an approach to the specific medical problem - with all its urgency - can be developed later, through a fundamental understanding of the substances and reactions touching upon cancer.

Our Multiple Sclerosis project, aided by a grant from the National Multiple Sclerosis Society, is a research project, in the field of medicine. Fundamental aspects are hoped for as byproducts, so as to speak, but the chief aim is an "applied" one: to aid clinicians in their study of the treatment of multiple sclerosis.

One of the chief consequences of this disease is the development of patches of "demyelination" in the victim's nervous system. By this is meant the breakdown of the myelin sheath, the complex fatty envelope of some nerve fibers. Like the breakdown of insulation in an electric wiring system, demyelination is thought to cause impairment in the transmission of impulses, as evidenced by spastic and paralytic symptoms. If a way could be found to stop this myelin breakdown, it might not mean a cure, but it might at least be of some value against some of the effects.

In the N. A. C. Research Laboratory we are isolating from soil, manure, and other sources microorganisms capable of chemically destroying myelin. With the bacteria, fungi, and actinomycetes thus grown we hope to be able to study drugs which might stop the myelin-destroying action in our test-tube system.

If we do not get sidetracked by other interesting observations; if our methods for each step in the investigation actually work; and if some "anti-demyelinating" compounds are actually found - then we can recommend such compounds to the doctors who do clinical research (tests on animals and on human patients). But all this yet remains to be done.

Such is the approach of medical research to a difficult problem. The *cause* of multiple sclerosis - like its treatment, unknown - is not involved in our project. The search for the cause is another, and a different, subject.

The research work at N. A. C. is interesting and significant. How much will be "accomplished" is anyone's guess, and depends also on the definition of "accomplished". Laboratories, unlike business firms, do not traditionally aim for "success". Their tradition is to do work, to have the work criticized by competent judges, and to have it published in one of the relevant periodicals (e. g. the Journal of Bacteriology, Journal of Biological Chemistry, Science). An amazingly small community of investigators happens to work in one's particular field at a given time. Thus two years later, but perhaps even twenty years later, someone might read the article which was published, become excited over it (they really do!), and take a slightly different tack along the same line of investigation.

(continued on page 15)

The N.A.C. Men's Chorus Under the Direction of Horry Pursel

GLEE CLUB CLOSES SPRING SEASON

Two Concerts Bring End To Successful Year

THE National Agricultural College Glee club concert given on March 11 proved to be a great success. The concert was given in the New Britain Educational Building as a part of the "Know Your Community Night".

Highlighting the program was a talk by Dean Meyer on the topic "The National Agricultural College and its place in the Community."

Benefit Concert

On Wednesday night, April 7th, the Glee Club gave its fifth annual Cancer Concert. The Concert was held at the Doylestown Boro School, and returns were turned over to the Bucks County Unit of the American Cancer Society.

The program opened with the singing of the Alma Mater. This was followed by "Brothers Sing On", "I Whistle a Happy Tune", "Whiffenpoof Song", "Halls of Ivy", and "You'll Never Walk Alone".

Carol Landa from the Ambler School of Horticulture gave a soprano solo. Carol sang "Can't Help Lovin' that Man" from "Show Boat."

Those who favor hill-billy style enjoyed the music of Ned Worstall and Art Force. The five numbers they sang were "Hey Good Lookin' ", "Are You Teasing Me," "It's A Sin," "Music Makin' Mama," and "Good Old Mountain Dew".

For the piano music lovers in the audience, Ed Pouttu from N. A. C. and Theodore Kloos from Temple University entertained. Ed tickled the ivories first. He played a good selection of rumba, polka, and popular songs. Among these were "Near You", "Tea For Two," "Beer Barrel Polka," and "Orchids in the Moonlight". He was accompanied on the drums by Arlin Eckhart. Theodore played a classical number.

A hardy applause was given to Kirk Arnold from N. A. C. and Virginia Snapp of The Ambler School of Horticulture for their vocal duet. They sang "You're Just In Love" from the musical hit "Call Me Madam." Kirk also took a solo part in another song along with the Glee Club.

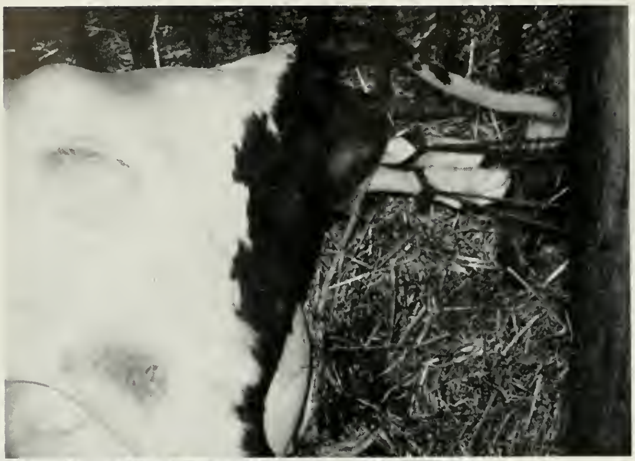
The Glee Club returned and sang "If I Loved You", "They Call It America," and "The Battle Hymn of the Republic" in which Lee Berger took the solo. This song was also accompanied by Arlin Eckhart on the drums.

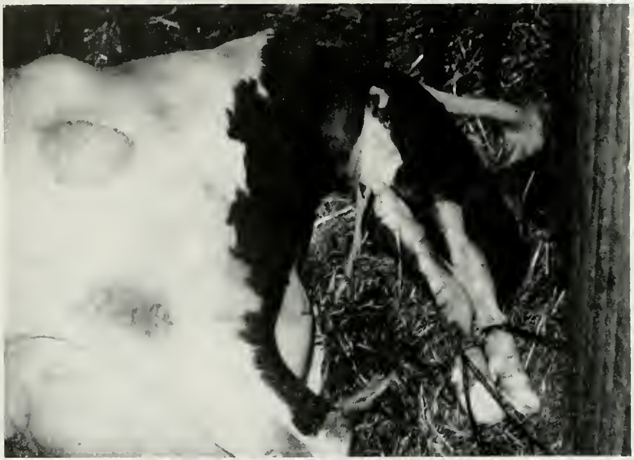
The applause after "The Battle Hymn of the Republic," which was the closing number, was so great that the Glee Club sang an encore, the vivacious Gilbert and Sullivan's "There Is Nothing Like A Dame". The smiles on the faces of each member of the Glee Club proved that they really enjoyed singing this song.

The Glee Club was under the capable direction of Harry Pursel. We are all certainly indebted to him, Ted Kloos, and the members of the Glee Club for the many hours spent in preparation for the program.

Art Force and Ned Worstoll Try Out a New Number At Concer Benefit

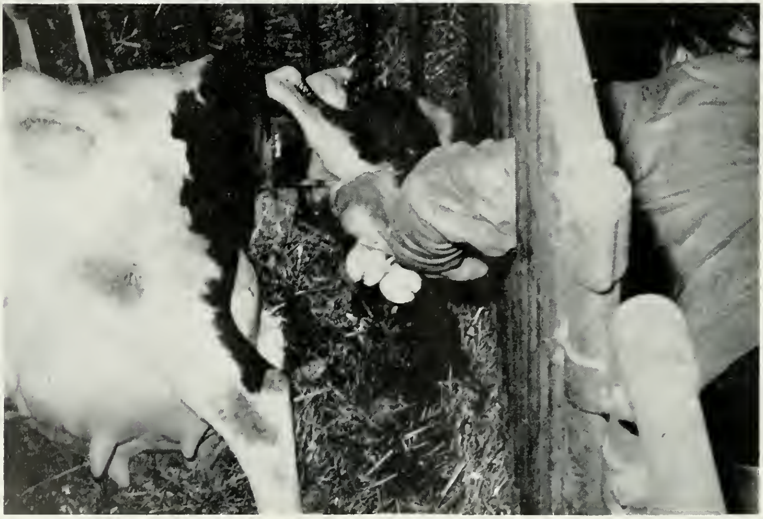
After the cow had labored for almost an hour, the herdsman decided to "pull" the calf. (Note ropes fastened above the pasterns.)





The calf's head is now out, and the hardest part of the birth is over. The cow may now continue her labor or the attendant may continue the pulling process.

The cow is now free of its burden and the attendant (Mr. Fickes) is about to remove the ropes and straighten the calf out.



Photographs by Marvin Adleman

Dripping wet, the calf takes its first breath of life.

Birth of A Calf

By Ed Jardel '54

GIVING birth is a noble but exhausting task confronting both human and animal alike. Thanks to advancements in obstetrics and psychophysics, mothers suffer less today than in the past. Unfortunately, the average cow can not enjoy psychotherapy, and facilities for animal birth are quite limited. Their suffering in many cases, however, can be lessened by the helping hand of the farmer or veterinarian if present.

To those who have never seen the birth of a calf, we hope the accompanying picture story will prove to be illuminating.

Picture number one shows a set of ropes fastened to the calf's legs, at the other end of which (not shown) Mr. Fickes is applying a pressure, the mere act having given it the name "pulling."

Pulling is done for one or more reasons: the calf may be too large (as is the case with many first calf heifers), the calf may be dead, or the mother may have exhausted herself through too long a labor (in which case the calf and mother may be lost). Fear of exhaustion on the part of the cow prompted Mr. Fickes to pull the calf pictured here.

The picture above shows the calf wet and still, but this will not be the case in a few hours. The cow will lick the calf dry, and in doing so stimulate circulation in its body. The calf will get to its feet, wobbly at first, but more steady after a few failures, and go in search of its first meal.

So goes birth—anticipation, pain, exhaustion; but the result . . . a fine bull calf that will go on to sire more of its breed.

Baseball Season In Review

The N.A.C. Baseball team, composed mainly of freshmen, completed an eight game schedule with a record of three wins and five losses.

Bloomfield College spoiled the opening game for the Aggies as they gained a 5 to 3 victory. Gene Sander, who relieved starter Duane Bair, was credited with the loss. Harry Conover led the losers with two hits.

The Aggies next played host to the Glassboro Teachers taking their second loss 12 to 5. Starter Bill Plenge was the losing pitcher.

The team then traveled to Glassboro to engage the teachers on their field. The Aggies won a neat 5 to 4 victory. The winning run was driven in by Charlie Indek as he singled in the fourth. Relief pitcher Ronnie Stammel gained the win.

The Aggies returned home playing The Newark Engineering College on a rainswept field in a game which saw the Green and Gold come from behind three times to rack up their second straight win 11 to 8. Sid Blair was the winner in relief for Plenge, Sander and Pouttu. Tom McMinn led the hitters with three singles.

Back on the road again, the team journeyed to Bloomfield College where they were routed 16 to 3. The Teachers rapped the offerings of pitchers Plenge and Sander for a total of 17 hits. Captain Dick Bradish had a single and a double for the losers.

At home once more, the Aggies watched a last inning rally fall short as they suffered a 10 to 8 defeat at the hands of the Newark Teachers. Errors proved to be the downfall as the homesters committed 10 behind the hurling of Pouttu and Stammel.

The Aggies hit the win column for a third time winning over Philadelphia Pharmacy 4 to 2 as Sid Blair went the route giving up eight hits and fanning seven. A double by Tom Watson, a walk and three errors gave the Aggies two runs in the second inning. The deciding tally was pushed across in the fourth when Charley Indek singled and romped home on "Corney" Evangeledes' double.

The Green and Gold finished the 1954 season at Selinsgrove taking a 6 to 2 loss at the hands of Susquehanna University. Starter Ron Stammel was pounded for six runs on seven hits in the first two innings but Sid Blair relieved him in the third pitching seven innings of sparkling, one-hit ball. The Aggie hitters never found the range as the home town hurlers limited them to four singles.

With the entire team returning next spring, Coach Keys is looking forward to a much improved season.

CROP SURPLUS PROBLEM

(continued from page 5)

This is a fantastic 1300 percent increase above the average yield in that state. This extremely high yield probably is economically unsound at present; however yields of 50 to 100 bu. per acre in that area are profitable. The Pennsylvania average yield is 43 bu. per acre, but we are producing about twice that on the College farms. Average cotton yields are about 350 lb. per acre, yet many farmers are profitably producing two and three times this yield. Recent methods of effective boll weevil control will allow farmers to plant higher yielding cotton varieties. The average yield of potatoes per acre for the United States rose from 198.8 bu. (1943-52 average) to 309.3 bu. in 1953. Record yields of potatoes in many states have run from 600 to 900 bu. per acre. The interest in pasture and hay management has brought much higher yields in those crops. Great improvements have been made in animal production through efficient feed management. Doubtless Malthus and Crookes under-estimated the capabilities of future American agronomists when they made their prediction that the world food supply would not keep up with population.

Is there a likelihood of food shortage in the United States in the near future? The answer is no. In fact we have an entirely different problem on our hands — *overproduction.* Sometimes food production has outrun population as is indicated by recent political adventures in curtailing crop surpluses. These crop surpluses today pose as the major problem for the Agricultural Department as well as the party in power, for it is generally believed that adequate farm income is necessary to national prosperity.

In times of wars it is necessary to build up food supplies to meet emergencies. During the Korean conflict production controls became production goals as shown by the following statement of Secretary of Agriculture Brannon: "American farmers and ranchers face a real challenge in 1952. This challenge is the production of the greatest quantity of food and fiber in our history—during a period when their means of production will necessarily be limited." The resulting overproduction of wheat, cotton, and corn has forced the Agricultural Department to divert thirty million acres from these three crops in 1954. This program calls for 16.7 million acres to be diverted from wheat, 3.9 million acres from cotton, and 9.8 million acres from corn. Even with these diverted acres surpluses may still occur.

Where will the diverted acres go? Since prices of farm products are affected by parity and parity may be lowered, farmers concerned will have reduced incomes from these crops. What will the farmer do to increase his income? Where will the diverted acres go?

1. The farmer will increase yields on the alloted acreage and thus increase the surpluses of these basic commodities.
2. He may divert his acreage to other crops and thus create a surplus of those crops.

The farmer will only grow crops which he is equipped to handle. Corn and wheat acreage may be diverted into other grain crops. According to the Federal Reports a record acreage of oats is in prospect for 1954. Farmers intend to plant 47¼ million acres or 7½ percent more than last year in spite of the fact that oats alone as a grain crop are reportedly unprofitable. Farmers plan to plant 14.1 million acres of barley which is a 47 percent increase over 1953. A 28 percent increase in grain sorghums is expected. Much land will be diverted into hay, range, and pastures which will cause increased beef production and a lowering of beef prices to the disgust of cattlemen and to the delight of many city folks. Much of the corn and cotton land may be diverted into soybeans; thereby reducing the profit in this crop which farmers have so thoroughly enjoyed the last fifteen years. Reports indicate at least a 12 percent increase in soybean planting is planned. It looks as if surpluses will occur this year—if not in one crop, then in another.

There will always be years of surpluses of crops since yields depend upon weather, whereas use and stomach capacity do not. The agricultural prospects in this country are for recurring surpluses for many years to come.

N.A.C. GRADUATES

(continued from page 8)

pare our figures and percentages with the other agricultural colleges, but have contacted these institutions and hope to secure reports from them on the occupations held by their own graduates. When these answers are received, we will be able to compare our graduates with those of such Universities as Penn State, Rutgers, and Maryland. We do feel, however, that the fact that 94.3% or 9½ out of every 10 graduates of the National Agricultural College enter fields directly pertaining to agriculture will compare very favorably or be a much better percentage than most of the other Institutions of higher learning teaching agriculture.

Mr. Benjamin Fine, Educational Editor for the *New York Times*, recently published an article in that newspaper covering the occupational demand and average starting salary for College Seniors who will be entering their chosen fields this summer. Our report shows that the average salary or earnings of our alumni is a little above those in Mr. Fine's article. He considered Engineering, Liberal Arts, and Science college students as well as those in the agricultural field which shows that our graduates are doing exceptionally well. We find that the established agricultural companies are more friendly toward our College and are more willing to visit us and hire our graduates this year than a year ago. The Graduate Placement office is also being notified of a better type position this year than last which all points to the fact that the College's reputation has improved greatly especially through the Alumni's fine work in the field of Agriculture. This entire report decidedly points to the conclusion that the main objective of this College is being reached very satisfactorily and that the National Agricultural College's graduates are exceptionally well educated and trained for success in the field of their choice.

OF ANGSTROMS

(continued from page 10)

When this happens, the work of the first author has been "successfully accomplished". He may never find out about this success, he may in fact be dead by that time (as was the case with Gregor Mendel when DeVries started Mendelian Genetics), but that is the way it works in this peculiar, fascinating field.

CAMERA CORNER

For Good Results In Photographing The Seed

By Sherman Freed '55

In numerous field crop courses, many have shaken their heads, untwisted their eyes and said to themselves, "I can't see any difference between one small seed and another". This is a brief explanation of how you can photograph these small eye twisters and have reproductions such as those found in the U.S.D.A. sheet 8-7834a. A careful worker will even be able to produce prints far superior to these.

First let us talk about the camera we are going to use. A camera with a bellows is the most desirable, although other types may be used. Upon opening the bellows-type camera, the first thing you notice is the stop along the far end of the track on which the bellows rides. In order to get close enough to the subject, we must get the bellows, with of course the lens, beyond this stop point. Some of you will recognize this bellows extension as "changing the focal length" or the distance between the lens and the image. On most cameras the track will "break" down at the large hinges, allowing the bellows to be lifted out and extended beyond the stop. This operation should be done very carefully. If the track refuses to "break" at the hinges do not force it. It probably "breaks" in some other manner. If you are successful at this point, stretch the bellows slowly as it may be stiff and, if jerked suddenly, may crack. A little vaseline rubbed into the bellows may eliminate any stiffness. After you have placed the bellows back on the track beyond the stop point be sure that it is locked securely.

Our next step is to set up the seeds to be photographed. Here a "light box" is used to good advantage. This apparatus consists of a box with three closed sides, the fourth having been left open. Sheets of clear or ground glass are used for the top and as a base for the seed subjects. This box can be any size, but a 3'x3'x6" is more easily handled. A clean white card, the size of the interior, is inserted into the box with the leading edge curved upwards until it reaches the glass at the back of the box. Tack the front edge to the base.

Two back or spot lights are placed close to the floor of the box and the light is directed evenly through the open side, against the curved card. This provides a light that is now reflected upward. Place your seeds on the glass top and you will notice immediately that there are no shadows, but still a tremendous amount of depth.

With the camera securely held on a tripod which is straddling the box, we point it directly down. If you have no ground-glass in which to observe the field covered, open your lens and observe the field through it. If you have a supplementary lens, use it. Set up a flood light close to the camera and facing directly down on the seeds. Check your focus and you are almost ready to take your picture.

Realizing that we have brought our camera lens unnaturally close to the subject, we must now make a correction in exposure. If you have a meter, turn off the bottom lights on the card and take a reading. Be careful not to throw a shadow on the seeds. This will give you an indicated reading on which to judge your exposure. You may have to make several shots to decide for yourself which is the correct, indicated exposure. Then use the following formula to make your correction of the "f" number or just increase the exposure time by v2/f2.

$$\text{Effective "f" no.} - \frac{vxf}{f}$$

v - lens to film distance
F - indicated "f" no.
f - focal length

The film we use should have a high rate of resolving power and contrast. These include: roll films, Plus X, Defender X-F Pan; Film Packs, Plus X,
Super Ortho-Press, Ansco Supreme;
Sheet Film, Super Panchro-Press Type B,
Super XX and 35 mm Film, Panatomic X.

HIJACKED HUMOR

Compiled By Bub Jaggard '54

Stopping at the first farm house on his famous midnight ride, Paul Revere cried:

"Is your husband at home?"

"Yes!" came back the reply.

"Tell him to get up and defend himself; the British are coming."

At the second, third, and fourth house it went something like this:

"Is your husband at home?"

"No," came back the reply.

"Whoa!"

* * * *

Mary had a little swing;
It wasn't hard to find,
For everywhere that Mary went
The swing was right behind.

* * * *

Marv: "Let's not have any more jokes about sex, drinking or profanity."

Bub: "Okay, I'm tired of putting out this magazine, too."

* * * *

Two Wacs returning late one night got into the wrong barracks—those of the enlisted men. One lost her head and ran; the other remained calm and collected.

* * * *

"Just when do you intend to drive back to town and take me home?"

"As soon as you say the word."

"Then let's go home."

"That's not the word."

* * * *

And then there was the coed who was so thin that when she swallowed an olive twelve men left town.

* * * *

She: "We're going to give the bride a shower."

He: "Count me in. I'll bring the soap."

* * * *

Professor: "Are you cheating on this exam?"

Student: "No, I was just telling Bob that his nose is dripping on my paper."

Molly: Why do you call your boy friend Pilgrim?

Polly: Because every time he calls he makes a little progress.

* * * *

Jack and Jill went up the hill, upon a moonlight ride.
When Jack came back, his eye was black. . . .
His pal, you see, had lied.

* * * *

A hot-spell story that we like is about the girl who went swimming in the raw in a secluded millpond. Along came a little boy who began to amuse himself tying knots in her clothes. She floundered around, found an old washtub, held it up in front of herself and marched toward the little boy saying: "You little brat, do you know what I'm thinking?"

"Sure," said the little brat, "you think that tub has a bottom in it."

* * * *

A pretty young girl named Goring,
Found married life very boring.
Her hubby, named Ned,
Believed in early to bed
And in two minutes flat he was snoring.

* * * *

Question: "Dear Miss Dix, I am nineteen years old and I stayed out last night till 4 o'clock. Did I do wrong?"

Answer: "Dear Jane. Try to remember."

* * * *

She was only a lawyer's daughter, but it was easy to break her will.

* * * *

Quiet Student: "Something came into my mind just now and went away again."

Bored Roommate: "Perhaps it was lonely."

* * * *

A certain young man once remarked to his girl, "I'll bet you wouldn't marry me."

The story goes that she not only called his bet, but raised him five.

An officer of ancient Rome, called away to the wars, locked his beautiful wife in armor. Then he gave the key to his best friend with the admonition:

"If I don't return in six months, use this key. To you, my dear friend, I entrust it."

He then galloped off to the wars. About ten miles from home he saw a cloud of dust approaching and waited. His trusted friend, on horseback, galloped up and said:

"You gave me the wrong key."

* * * *

She: "What are you thinking of?"

He: "The usual thing."

She: "I'll scream."

* * * *

"It's a sad case."

"What is?"

"A dozen empties."

* * * *

She: I'm a good girl.

He: Who asked you?

She: No one.

He: Then no wonder you're a good girl.

* * * *

Fraternity man: "I'd ask you for this dance, but all the cars are occupied."

"A" DAY - 1954

(continued from page 7)

set up many well designed educational exhibits. Among the Food Industry displays were a table setting, a milk plant operation in pictures, containers and packaging materials used in commercial food processing, and equipment used in modern milk testing. A good deal of credit goes to Lester Ludwig for a well planned set of displays. The Agronomy men set up many interesting picture stories and models relating to soil conservation along with a display of grains and grasses.

At 5:00 P.M. on May 1st, "A" Day 1954 officially came to a close. A great deal of credit is due the men who did such an excellent job in planning and arranging this most successful "A" Day. The Chairman of the committee, Bill Mulvey and his Co-Chairmen Howard Kemmerer and Sherman Freed, along with the entire committee, deserve a hand for a good job well done.

CLUB ACTIVITIES

By Ron Stammel '56

During this past year one club has been reorganized and another has been formed.

The Horticulture club has been very active this year, holding regular meetings every two weeks. The meetings have featured prominent guest speakers in the field, and audio visual demonstrations pertaining to both horticulture and ornamental horticulture. On one of its many field trips, the club went to Beltsville Md. to visit the agricultural research station located there. The club's A-Day project is headed by Vic Ransom, who will supervise setting up the gymnasium for the Flower Show which will include educational exhibits, garden retreats, natural settings and a host of individual floral displays. The club president this year has been Carl Bornfriend.

The Animal Husbandry Club, under the leadership of President Ed Jardel has enjoyed a full schedule of guest speakers at its meetings to supplement the work studied in class. The club went to the beef establishment of Frank Holloran in Virginia. Frank, an alumnus with a fine commercial herd, made the visit both enjoyable and profitable. Lee Harvey and Buck Knouse have organized the club's A-Day program which will feature sheep, hogs, beef, and horses fitted and shown by the students.

The Food Industry Club is completing its first full year on campus, so it may be considered a new and quite active organ on campus. Al Rosner was president this past year. The major trip of the club was to the Eastern Regional Research Laboratories of the U. S. D. A. Besides their regular meetings, the club members sat in on several sessions of a course organized by the head chemist of Abbott's Laboratories in Phila. The A-Day theme of the club will be "Quality Control for You." Lester Ludwig has organized an interesting series of exhibits showing how the manufacturer protects the consumer.

The Dairy Society has been reorganized this year. A new constitution has been drawn up and Joe Bushel was elected President. Discussions in the regular meetings ranged from pen stabling to parlor milking. Brushes and curry combs have been purchased for the use of students fitting animals for A-Day. A-Day demonstrations of milking machines and artificial insemination, have been planned.

The Poultry Husbandry Club, presided over by Joe Birk, is running another of its annual projects which this year is raising New Hampshire Cockerels for broilers. This project is expected to be completed by A-Day. The club's exhibition will be contained in the Farm Machinery Building. Displays on nutrition and merchandizing will be among the points of interest.

The Varsity Club, composed of students who have earned a letter in a varsity sport, is presided over by Ed Jardel. The club ran the refreshment stand at the home football games and will do so again during A-Day. Jackets are being ordered for new members and senior awards and mugs are under discussion. The Victory Dance sponsored by the club was quite successful.

The photography club, while somewhat hampered this year by too few members, was, however, in operation. Bert Litoff, president, is heading the drive for new sincere members.

With the old year of school almost over the clubs are already organizing more dynamic programs for the coming year.

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